

AD-A130 386

EFFECTS OF BEHAVIORAL OBJECTIVES AND INSTRUCTIONS ON
LEARNING A CATEGORY TASK(U) NAVY PERSONNEL RESEARCH AND
DEVELOPMENT CENTER SAN DIEGO CA P J KONOSKE ET AL.

1/1

UNCLASSIFIED

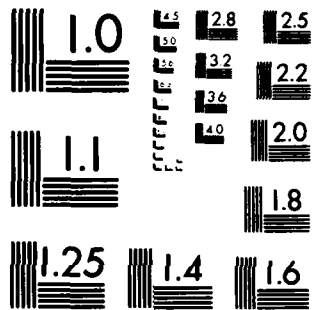
MAY 83 NPRDC-SR-83-33

F/G 5/9

NL

END
DATE
FILMED

8 83
DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ADA 130386

NPRDC SR 83-33

MAY 1983

**EFFECTS OF BEHAVIORAL OBJECTIVES AND
INSTRUCTIONS ON LEARNING A CATEGORY TASK**

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED



**NAVY PERSONNEL RESEARCH
AND
DEVELOPMENT CENTER
San Diego, California 92152**

Selection
JUL 15 1983
A

DTIC FILE COPY



83 07 15 015

**EFFECTS OF BEHAVIORAL OBJECTIVES AND INSTRUCTIONS ON
LEARNING A CATEGORY TASK**

**Paula J. Konoske
John A. Ellis**

**Reviewed by
John D. Ford, Jr.**

**Released by
James F. Kelly, Jr.
Commanding Officer**

| | |
|-----------------------|--|
| Accession For | |
| NTIS GRA&I | <input checked="checked" type="checkbox"/> |
| DIC TAE | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | |
| By | |
| Distribution / | |
| Approved: [Signature] | |
| [Signature] | |

**Navy Personnel Research and Development Center
San Diego, California 92132**



UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|--|-------------------------------------|---|
| 1. REPORT NUMBER NPRDC SR 83-33 | 2. GOVT ACCESSION NO. AD-A130386 | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) EFFECTS OF BEHAVIORAL OBJECTIVES AND INSTRUCTIONS ON LEARNING A CATEGORY TASK | | 5. TYPE OF REPORT & PERIOD COVERED Special Report FY82 |
| | | 6. PERFORMING ORG. REPORT NUMBER 13-83-2 |
| 7. AUTHOR(s) Paula J. Konoske John A. Ellis | | 8. CONTRACT OR GRANT NUMBER(s) |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS ZF66-512-001.007 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152 | | 12. REPORT DATE May 1983 |
| | | 13. NUMBER OF PAGES 13 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) | | 15. SECURITY CLASS. (of this report) UNCLASSIFIED |
| | | 16. DISC. APPLICATION/USING SCHEDULE |
| 17. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. | | |
| 18. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) | | |
| 19. SUPPLEMENTARY NOTES | | |
| 20. KEY WORDS (Continue on reverse side if necessary and identify by block number) Behavioral objectives Instructional strategies Classification learning Learning from text Individualized instruction | | |
| 21. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study compares the effects of behavioral objectives and explicit instructions on learning a category task. Subjects were assigned to one of four groups: a read-only control group, a standard Navy behavioral objective group, a revised behavioral objective group, and an instructions group. Results of a recall test and a classification test showed a significant difference in group performance. The data indicated that giving students explicit instructions or behavioral objectives that have been revised so that they are clear to the student facilitates recall and classification performance more | | |

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102- LP-014-6401

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

than giving nonspecific behavioral objectives. The instructional implications are that students should be given explicit instructions or behavioral objectives that use familiar terminology and consist of specific information about the nature of the testing situation when learning from text.

S/N 0102- LP-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

FOREWORD

This effort was conducted under project ZR000-01-042-06-01.01 (Enhancement of Information Acquisition). The purpose of this project is to provide a greater understanding of the effects of instructional strategies employing instructions and objectives on student study behaviors.

This report provides recommendations for writing instructions and behavioral objectives for instructional developers in the Instructional Program Development Centers and education specialists in Navy schools.

JAMES F. KELLY, JR.
Commanding Officer

JAMES W. TWEEDDALE
Technical Director

SUMMARY

Problem

The Navy currently requires that students be given behavioral objectives before they take instruction. Research has shown that performance increases significantly when specific behavioral objectives are used. An objective is specific when it is clear and salient to the student, uses terminology familiar to the student, and consists of specific information about the nature of the testing situation. Navy behavioral objectives do not always meet these criteria.

Objective

The purpose of this effort was to compare student performance in learning a category task when they were given either (1) a Navy behavioral objective, (2) the same Navy objective revised to be more specific and to specify directly the test behavior required, or (3) special instructions. In the revised objective, the terminology was changed to make it more appropriate and meaningful to the learner. The instructions included information regarding the nature of the test, the type of material to be tested, and the best way to study the materials.

Method

Eighty-two Navy enlisted personnel were randomly assigned to four groups: a read-only control group, a standard Navy behavioral objective group, a revised behavioral objective group, and an instructions group. The category task was a lesson on U.S. Navy radio call signs. After subjects had completed the lesson using experimental materials appropriate for their group, they took a recall test and a classification test.

Findings

Results of analyses of variance computed on results of the recall and classification tests showed a significant difference among the groups on test performance. The revised behavioral objective and the instructions groups recalled and classified better than did the standard Navy behavioral objective and the read-only control groups.

Conclusions

These data indicate that giving students explicit instructions or behavioral objectives that have been revised so that they are clear to the student facilitates recall and classification performance more than giving nonspecific behavioral objectives.

Recommendations

Students should be given specific instructions or behavioral objectives that use familiar terminology and consist of specific information about the nature of the testing situation when learning from text.

CONTENTS

| | Page |
|------------------------------|------|
| INTRODUCTION | 1 |
| Problem | 1 |
| Background | 1 |
| Objective | 2 |
| METHOD | 2 |
| Subjects and Materials | 2 |
| Procedure | 3 |
| RESULTS | 3 |
| CONCLUSIONS | 4 |
| RECOMMENDATIONS | 4 |
| REFERENCES | 5 |
| DISTRIBUTION LIST | 7 |

INTRODUCTION

Problem

The Navy currently requires that students be given behavioral objectives before they read instruction. Research has shown that this practice is sometimes effective while, at other times, it is not. For example, Rothkopf and Kaplan (1972) found a significant increase in performance when using specific rather than general behavioral objectives. An objective is specific when it is clear and salient to the student, uses terminology familiar to the student, and consists of specific information about the nature of the testing situation.

Behavioral objectives used in the Navy often do not meet these criteria because they are written for one of two purposes: They can focus either on the behavior of the instruction developer or on that of the student. Typically, behavioral objectives are written to provide guidance to the Navy developers regarding the instructional materials, rather than to provide the student with clues about the nature of the testing situation.

Background

Many experiments have investigated the effects of behavioral objectives on learning. Hartley and Davies (1976) and Lewis (1981) provide good summary reviews. Some of the variables that have been studied include (1) student awareness of and interest in the stated objective, (2) clarity, difficulty, and the number of objectives, (3) whether the objectives should be inserted into texts before or after related instructional material, and (4) the frequency with which such insertions occur.

As indicated previously, Rothkopf and Kaplan (1972) found that performance increased when using specific behavioral objectives. Further, Huck and Long (1973) demonstrated a greater recall of prose when objectives are salient or explicit to the instructional task than when they are not. They concluded that the explicitness of the objectives helps the student use them as useful "advance organizers."

Duell (1974) provides some support for the notion that behavioral objectives are effective because they serve as clues to the student regarding the nature of the testing situation. She gave students detailed behavioral objectives that directed them to learn names and definitions and found that students who received the objective performed better than those who did not. Duell hypothesized that objectives focus student study behavior by setting off information needed when the learner is tested and by ensuring that the learner is aware of this relationship.

One problem with research in this area is that some studies employ objectives that are more explicit or precise than others. Dalis (1970) underlined the importance of clarity of the behavioral objectives by a study in which he noted that students provided with precisely stated, behaviorally-oriented objectives performed significantly better than did those provided with either vaguely stated instructional objectives or short paragraphs of information. Also, it is not always recognized that behavioral objectives themselves can vary considerably in clarity and that this can be a major factor in determining whether or not they enhance relevant learning.

Another factor that may facilitate relevant learning is the difficulty level of the behavioral objectives. In reviewing studies of the effects of behavioral objectives on learning, Brown (1970) pointed out that the degree of difficulty of the objectives can

influence student performance. If the objective is extremely difficult or extremely easy, it is difficult to discriminate between the performance of students who were or were not provided with the objective. It is possible that the degree of familiar terminology used in the objective could influence the difficulty of the objective and the chances that the student will use them.

Objective

The purpose of this effort was to compare student performance in learning a category task when they were given either (1) a Navy behavioral objective, (2) that same Navy objective revised to be more specific and to specify directly the test behavior required, or (3) special instructions. In the revised objective, the terminology was changed to make it more appropriate and meaningful to the learner. The instructions included information regarding the nature of the test, the type of material to be tested, and the best way to study the materials.

METHOD

Subjects and Materials

Subjects were 82 Navy enlisted personnel who were randomly assigned to four groups--a read-only control group, a Navy behavioral objective group, a revised behavioral objective group, and an instructions group. The category task was a 972-word lesson on Navy radio call signs, which are used by radio stations to identify themselves (e.g., WABC or KCBA). The text of the lesson was a narrative description of each type of call sign. Two tests were developed: One requiring the student to recall the names and definitions of the call signs; and the second, to classify a list of 18 call signs.

The original and revised Navy behavioral objectives used in the study are presented in Figure 1.

The Navy Behavioral Objective:

In this lesson, the student will be given a list of address designators that includes the following types of call signs: International U.S. Navy Ship, International U.S. Navy Shore, Task Organization, Indefinite, and Voice.

The student will be able to recall the name and characteristics of each type of call sign address designator and be able to categorize each according to the type of call sign it is.

The Revised Behavioral Objective:

Upon completion of this lesson, the student will be able to classify any call sign according to one of the following types--International U.S. Navy Ship, International U.S. Navy Shore, Task Organization, Indefinite, Voice, or not a valid Navy call sign.

Upon completion of this lesson, the student will write from memory the names and characteristics of each of the following types of call signs: International U.S. Navy Shore, International U.S. Navy Ship Indefinite, Task Organization, and Voice.

Figure 1. The Navy objective and the revised objective used in the study.

Procedure

Subjects were given the experimental materials in booklets and allowed to work through them at their own pace. The read-only control group was given the call signs material; the Navy behavioral objective group, the Navy objective and the call signs material; the revised behavioral objective group, the revised objective and the call signs material; and the instruction group, the same information as the revised behavioral objective group plus information regarding the best way to study material.

After completing the materials, all subjects were given the written recall test, followed by the classification test. Analyses of variance (ANOVA) were used to compare group performance on the tests.

RESULTS

ANOVA results showed that the main effect for groups was significant for the recall test ($F(3,78) = 3.52, p < .02$) and for the classification test ($F(3,78) = 3.59, p < .02$). Means and standard deviations for each group on test performance are presented in Table 1.

Table 1
Means and Standard Deviations for all Groups on the Tests

| Group | N | Recall Test | | Classification Test | |
|-------------------|----|-------------|------|---------------------|------|
| | | M | SD | M | SD |
| Read-only control | 20 | 4.55 | 2.30 | 7.55 | 4.04 |
| Objective | 19 | 4.52 | 1.67 | 7.78 | 4.10 |
| Revised objective | 20 | 6.45 | 2.99 | 11.65 | 5.02 |
| Instructions | 23 | 6.21 | 2.72 | 9.91 | 4.87 |

Note. The maximum scores on the recall and classification tests were 10 and 18 respectively.

Planned orthogonal comparisons of the group means of scores on the recall test revealed that the revised behavioral objective and the instructions groups differed from the read-only control and the Navy behavioral objective groups ($t(78) = 3.71, p < .01$), but not from each other.

The planned orthogonal comparisons of the group means of scores on the classification test revealed the same pattern of results as did the comparisons on the recall test. The revised behavioral objective and the instruction groups did not differ from each other but they did differ significantly from the read-only control and the Navy behavioral objective groups ($t(78) = 3.41, p < .01$). These data indicate that giving specific behavioral objectives or specific instructions is more effective for recall and classification performance than giving nonspecific behavioral objectives.

CONCLUSIONS

Results support the hypothesis that giving students a specific behavioral objective or explicit instructions is more effective than giving a nonspecific behavioral objective on learning a category task. Information regarding the nature of the tests, the type of information to be tested, and the best way to process the information is more effective than nonspecific behavioral objectives in focusing attention and study behaviors on category material.

RECOMMENDATIONS

Students should be given specific behavioral objectives or explicit instructions that utilize the terminology familiar to the student and consist of specific information about the nature of the testing situation when learning from text.

REFERENCES

- Brown, J. L. The effects of revealing instructional objectives on the learning of political concepts and attitudes in two role playing games (Unpublished doctoral dissertation). University of California, 1970, Dissertation Abstracts International, 1971, 31, 5263.
- Dalis, G. T. Effect of precise objectives upon student achievement in health education. The Journal of Experimental Education, 1970, 39, 20-23.
- Duell, O. K. Effect of type of objective, level of text questions, and the judged importance of tested materials upon post-test performance. Journal of Educational Psychology, 1974, 66, 225-232.
- Hartley, J., & Davies, I. K. Preinstructional strategies: The role of pretests, behavioral objectives, overviews, and advance organizers. Review of Educational Research, 1976, 46, 239-265.
- Huck, S. W., & Long, S. D. The effect of behavioral objectives on student achievement. Journal of Experimental Education, 1973, 42, 40-41.
- Lewis, J. M. Answers to twenty questions on behavioral objectives. Educational Technology, 1981, March, 27-31.
- Rothkopf, E. Z., & Kaplan, R. Exploration of the effect of density and specificity of instructional objectives on learning from text. Journal of Educational Psychology, 1972, 63, 295-302.

DISTRIBUTION LIST

Chief of Naval Material (NMAT 0722)
Chief of Naval Education and Training (02), (N-2), (N-5), (N-9)
Chief of Naval Technical Training (016)
Chief, Bureau of Medicine and Surgery (MED-25)
Commander Fleet Training Group, Pearl Harbor
Commander Training Command, U.S. Atlantic Fleet
Commander Training Command, U.S. Pacific Fleet
Commanding Officer, Fleet Anti-Submarine Warfare Training Center, Atlantic
Commanding Officer, Fleet Anti-Submarine Warfare Training Center, Pacific
Commanding Officer, Fleet Combat Training Center, Atlantic
Commanding Officer, Fleet Combat Training Center, Pacific
Commanding Officer, Fleet Training Center, San Diego
Commanding Officer, Naval Damage Control Training Center
Commanding Officer, Naval Education and Training Program Development Center (Technical Library) (2)
Commanding Officer, Naval Education and Training Support Center, Pacific
Commanding Officer, Naval Health Sciences Education and Training Command
Commanding Officer, Naval Regional Medical Center, Portsmouth (ATTN: Medical Library)
Commanding Officer, Naval Technical Training Center, Corry Station (Code 101B)
Commanding Officer, Naval Training Equipment Center (Technical Library) (5)
Commanding Officer, Office of Naval Research Branch Office, Chicago (Coordinator for Psychological Sciences)
Commanding Officer, Recruit Training Command (Academic Training Division)
Commanding Officer, Service School Command, San Diego (Code 3200)
Director, Career Information and Counseling School (Code 3W34)
Director, Defense Activity for Non-Traditional Education Support
Director, Management Information and Instructional Activity Branch Office, Memphis
Director, Naval Education and Training Program Development Center Detachment, Great Lakes
Director, Naval Education and Training Program Development Center Detachment, Memphis
Director, Training Analysis and Evaluation Group (TAEG)
Officer in Charge, Central Test Site for Personnel and Training Evaluation Program
Superintendent, Naval Postgraduate School
Commander, Army Research Institute for the Behavioral and Social Sciences, Alexandria (PERI-ASL)
Chief, Army Research Institute Field Unit--USAREUR (Library)
Chief, Army Research Institute Field Unit, Fort Harrison
Commander, Air Force Human Resources Laboratory, Lowry Air Force Base (Technical Training Branch)
Commander, Air Force Human Resources Laboratory, Williams Air Force Base (AFHRL/OT)
Commander, 314 Combat Support Group, Little Rock Air Force Base (Career Progression Section)
Commandant Coast Guard Headquarters
Commanding Officer, U.S. Coast Guard Institute
Commanding Officer, U.S. Coast Guard Research and Development Center, Avery Point
Commanding Officer, U.S. Coast Guard Training Center, Alameda
Superintendent, U.S. Coast Guard Academy
President, National Defense University (3)
Defense Technical Information Center (DDA) (12)